

REMARKS

Claims 1, 4, 7, 10-22, 24, 26-34 and 55-64 are pending. Claims 2, 3, 5, 6, 8, 9, 23, 25, and 35-54 are canceled.

1. Claims 1, 4, 7, 10-22, 24, 26-34, and 55-64 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse this rejection.

Specifically, the PTO appears to object to the term “stabilized.” The standard for determining compliance with the written description requirement is, “does the description clearly allow persons of ordinary skill in the art to recognize that he or she invented what is claimed.” *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1991).

One of ordinary skill in the art understands that the properties flow and leveling and sag resistance are measured after the surface coating stabilizes. As such, one of ordinary skill in the art would have recognized that the Applicant’s recited flow and leveling and sag resistance are stabilized values.

Therefore, claims 1, 4, 7, 10-22, 24, 26-34, and 55-64 comply with the written description. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. 112, first paragraph, rejection.

2. Claims 1, 4, 7, 10-22, 24, 26-34, and 55-64 were rejected under 35 U.S.C. 112, first paragraph, as failing to enable a person skilled in the art to make the invention commensurate in scope with the claims. Applicants respectfully traverse this rejection.

Applicants respectfully submit that the PTO has failed to establish nonenablement of the invention commensurate in scope with the claims because full consideration of the eight factors identified by the courts leads to a clear conclusion that NO undue experimentation is required to make or use the claimed invention. Further, the PTO has failed to articulate analysis of the dependent claims for enablement.

The enablement requirement refers to the requirement of 35 U.S.C. 112, first paragraph, that the specification describe how to make and how to use the invention. *MPEP* 2164. Any analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contains sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention. The statute has been interpreted to require that the claimed invention be enabled so that any person skilled in the art can make and use the invention without undue experimentation. *In re Wands*, 8 USPQ2d at 1404 (Fed. Cir. 1988) and *MPEP* 2164.01. The fact that the experimentation may be complex does not necessarily make it undue, if the art typically engages in such experiments. *In re Certain Limited-Charge Cell Culture Microcarriers*, 221 USPQ 1165, 1174 (Int'l Trade Comm'n 1983). See also *In re Wands*. *MPEP* 2164.01.

Note, not everything necessary to practice the invention need be disclosed. In fact, what is well-known is best omitted. *In re Buchner*, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991). All that is necessary is that one skilled in the art be able to practice the claimed invention, given the level of knowledge and skill in the art. Further, the scope of enablement must only bear a “reasonable correlation” to the scope of the claims. See, e.g., *In re Fisher*, 166 USPQ 18, 24 (CCPA 1970). *MPEP* 2164.08. As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. 112 is satisfied. *In re Fisher*, 166 USPQ 18, 24 (CCPA 1970), *MPEP* 2164.01(b). The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art. *In re Fisher*, 166 USPQ 18, 24 (CCPA 1970), *MPEP* 2164.03.

Further, the presence of inoperative embodiments within the scope of a claim does not necessarily render a claim nonenabled. The standard is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be inoperative or operative with the expenditure of no more effort than is normally required in the art. *Atlas Powder Co. v. E.I. du Pont de Nemours & Co.*, 224 USPQ 409, 414 (Fed. Cir. 1984). *MPEP* 2164.08(b).

The courts recited eight factors helpful in determining whether experimentation is undue: (a) the breadth of the claims; (b) the nature of the invention; (c) the state of the prior art; (d) the level of one of ordinary skill in the art; (e) the level of predictability in the art; (f) the amount of direction provided by the inventor; (g) the existence of working examples; and (h) the quantity of experimentation needed to make or use the invention based on the content of the disclosure.

MPEP 2164.01(a).

Breadth of the Claims

The claims are directed to surface coating solutions including water-based polymer emulsions or latex and an amount of anisotropic boehmite particles. In addition, the claims recited properties, such as flow and leveling and sag resistance, which the PTO acknowledges are part of the scope of the claims.

The PTO states that the scope of the claims includes paints, surface protectants, and adhesives as discussed in the specification and “it also includes cosmetics, for example.” *Office Action*, pg. 3. The present claims recite the surface coating is a paint, enamel, adhesive, architectural coating, or light industrial maintenance coating. As such, the scope of the claims relates to surface coatings, such as paints, surface protectants, and adhesives having the compositional limitations of the claims and the properties recited in the claims. That is, the scope is not all surface coatings having the compositional limitations, but only those that also exhibit the recited properties.

The PTO states that had the Applicants shown that a composition comprising 2 wt% of an acrylic polymer emulsion and 0.1 or 5 wt% of the recited boehmite particles have yielded the instantly recited properties, the examiner’s instant position would have been weak (*Office Action*, pg. 3). However, the standard is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be inoperative or operative with the expenditure of no more effort than is normally required in the art. The presence of inoperable embodiments does not render a claim nonenabled. *MPEP 2164.08(b)*.

In addition, dependent claims further recite elements of narrower scope than the independent claims, including species of polymers, the type of surface coating (e.g., paint), a

species of boehmite, compositional ranges of boehmite, and additional properties of the surface coating, among others. The PTO has failed to provide analysis of enablement with respect to the narrower scope of each of the dependent claims, merely stating that the dependent claims do not overcome the rejection.

Nature of the Invention, State of the Art, and Level of Skill in the Art

As described above, the nature of the invention relates to thickeners that provide a combination of desirable properties to water-based or latex surface coatings. In view of the cited art and the attached brochures, the state of the art is mature and the level of skill in the art is high.

The PTO has cited references, including Bugosh (US 2,915,475) issued in 1959 and Napier (US 3,357,791) issued in 1967, which relate to fibrous alumina monohydrate for use in coatings. In addition, the PTO has cited references, such as Elsik et al. (US 5,550,180) issued in 1996 and Gernon et al. (US 2006/0106129) published in 2006, which are directed to latex formulations. Specifically, Elsik et al. disclose alumina thickened latex formulations, and Gernon et al. is cited by the PTO with regard to properties recited in the claims. Furthermore, the properties recited in the claims are well-known properties, having been specified in ASTM standards.

In addition, it is common for manufacturers to provide exemplary formulas in which a component can be used. For example, the attached UCAR Latex 379G brochure provides exemplary formulations for interior flat paint, super flat interior paint, contractor flat paint, eggshell enamel, semigloss enamel, and exterior flat paint. Similarly, other components provide recommended uses and usage levels. For example, see the brochure for BYK-1650 Defoamer, used in the examples of Gernon. As such, the skill level in the surface coating arts is high, the contribution of various components to properties of the surface coating is well understood, and manufacturers provide suggested starting formulas, making it easy for one of ordinary skill in the art to identify a base formula.

With the PTO citations and the attached brochures, it is clear that that the practice or art of thickening water-based or latex surface coatings with thickeners, including alumina thickeners, is mature and that the level of skill in the art is high.

Nevertheless, the PTO states that the level of art is not mature and the level of skill in the art is not considered high, citing prior art teaching of use of boehmite particles and the fact that addition of various thickeners to a coating composition is known. In fact, such cited knowledge and teachings would be evidence of high maturity and skill.

Level of Predictability in the Art

Given the mature state of the surface coating arts and the level of skill of those of ordinary skill in the surface coating arts, the effects of conventional components on the properties of a surface coating is well understood.

In particular, the PTO has cited references, including Gernon et al. and Elsik et al. that describe the effect of various conventional components on the properties of surface coatings. Specifically, Gernon et al. describe the influence of conventional surface coating components on many properties, including leveling. While the PTO argues that limitations associated with various polymers, pigments, surfactants, non-associative thickeners, and co-solvents are absent from the claims, the effect of using such conventional components in various amounts is well-understood by those of ordinary skill in the art, as evidenced by the cited references. The cited brochures for UCAR Latex and BYK-1650 defoamer provide further evidence that the effect of other components is known. Note that not everything necessary to practice the invention need be disclosed. In fact, what is well-known is best omitted. *In re Buchner*, 18 USPQ2d 1331, 1332 (Fed. Cir. 1991).

The PTO further states that Applicant's statements regarding the relationship of sag resistance and flow and leveling is proof of unpredictability. In fact, the recognition by those of ordinary skill in the art that varying the amount of conventional thickeners provides an inverse relationship between flow and leveling and sag resistance is evidence of predictability with respect to conventional thickeners.

Referring to Tables 5 and 6 of the Declaration submitted August 17, 2009, the values of flow and leveling and sag resistance clearly have an inverse relationship. When sag resistance is low, flow and leveling is high, and when sag resistance is high, flow and leveling is low. In particular, when sag resistance is 5 or less, as illustrated in Table 5, flow and leveling is 5 or higher. However, when sag resistance is 8 or higher, flow and leveling is around 1 or 2, as illustrated in Table 6. As noted previously, the measured values are stabilized values, rendering them comparable to other values of record.

Upon education as to the nature of a particular thickener and its relationship to properties of the surface coating, one of ordinary skill in the art would be able to perform a reasonable amount of experimentation and produce a surface coating commensurate in scope with the present claims. That is, after reading the Applicants' disclosure, one of ordinary skill in the surface coating arts would have been able to formulate a surface coating using the present activated boehmite.

Amount of Direction, Existence of Working Examples, and Quantity of Experimentation

Applicants have provided working examples and guidance within the present specification that enable one of ordinary skill in the art to make and use the claimed composition without undue experimentation.

As long as the specification discloses at least one method for making and using the claimed invention that bears a reasonable correlation to the entire scope of the claim, then the enablement requirement of 35 U.S.C. 112 is satisfied. *In re Fisher*, 166 USPQ 18, 24 (CCPA 1970), MPEP 2164.01(b). The amount of guidance or direction needed to enable the invention is inversely related to the amount of knowledge in the state of the art as well as the predictability in the art. *In re Fisher*, 166 USPQ 18, 24 (CCPA 1970), MPEP 2164.03. The fact that the experimentation may be complex does not necessarily make it undue, if the art typically engages in such experiments. *In re Certain Limited-Charge Cell Culture Microcarriers*, 221 USPQ 1165, 1174 (Int'l Trade Comm'n 1983).

Applicants have clearly disclosed at least one method for making and using the claimed invention and have provided examples. Given the mature state of the art, as well as the high

level of skill in the art and the ability of those of skill to formulate surface coating solutions, the amount of guidance needed to enable the invention is relatively low. Applicants have clearly provided sufficient guidance.

Further, the standard for undue experimentation does not require NO experimentation, but instead, experimentation beyond that in which the art typically engages. As illustrated in the cited references and as is clear from the literature, such as the ASTM standards, the surface coating arts typically perform experimentation. The experimentation consists of mixing components typically in a two-step process (e.g., grind and let-down). The process to formulate the presently claimed surface coatings would require no more than an extra mixing step, which is not complex, or adding one component in place of another, which is also not complex.

In addition, it is common to perform experimentation within the coatings industry. While manufacturers provide exemplary formulations, it is common for a formulator to perform many experiments to determine a formula having the desired properties for a given application. As such, the surface coatings industry typically engages in experimentation.

The PTO further states that the recited properties are based on the particular composition having reasonable base properties. Applicants have provided guidance reasonably correlated with the scope of the claims regarding what can be included in the composition. See Present Specification, par. [0012], [0020], and [0025] and Examples. Applicants respectfully submit that, given Applicants' disclosure and given the mature state of the art and the skill of those of ordinary skill in the art, those of ordinary skill in the art can determine which surface coating formulations comply with the recited claim features without undue experimentation.

Thus, the quantity of experimentation needed to make or use the invention based on the present disclosure is within the amount typically performed by the surface coating industries. Such experimentation is neither extensive nor complex and therefore, is not undue.

Conclusion

Given the mature state of the prior art, the level of skill of one of ordinary skill in the art, and the level of predictability that such skill imparts, Applicants have clearly provided enough direction and examples in the present specification to enable one of ordinary skill in the art to

practice the claimed invention, commensurate with the scope of the claims, without undue experimentation beyond that normally performed in the surface coating industry. Applicants' disclosure reasonable correlates with the scope of the claims. As such, Applicants respectfully submit that, once educated on the behavior of a specific thickener (e.g., its relationship to flow and leveling and sag resistance), such as through Applicant's present specification, those of ordinary skill in the art can prepare a surface coating using such a thickener without undue experimentation.

For at least the foregoing reasons, Applicants respectfully submit that, after reading the present disclosure, one of ordinary skill in the art would have been able to make and use the recited composition commensurate in scope with the claims without undue experimentation. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. 112, first paragraph rejection.

3. Claims 1, 4, 7, 10-22, 24, 26-34, and 55-64 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Applicants respectfully traverse this rejection.

The properties of the surface coatings stabilize after an initial period of approximately 24 hours. That is the rate of change of the properties significantly diminishes after the initial period. Applicants refer to the stabilized properties in the specification, performing testing after 72 hours. As demonstrated in the Declaration signed February 2, 2009, the properties measured at 24 hours and 1 week illustrated in Table 2 are the same for most of the samples and change only slightly for one sample (Catapal D).

Applicants have amended the claims to reflect that the flow and leveling and sag resistance are measured after stabilization.

For at least the foregoing reasons, Applicants respectfully submit that present claims 1, 4, 7, 10-22, 24, 26-34, and 55-64 particularly point out and distinctly claim the subject matter which Applicants regard as the invention, and thus, are not indefinite. As such, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. 112, second paragraph rejection.

4. Claims 1, 4, 7, 10-22, 24, 26-34, and 55-64 were rejected under 35 U.S.C 103(a) as being obvious over Elsik et al. (US 5,550,180, hereinafter “Elsik”) in view of Bugosh (US 2,915,475, hereinafter “Bugosh”), and in view of Gernon et al. (US 2006/0106129 A1, hereinafter “Gernon ‘129”). Applicants respectfully traverse this rejection.

The data of the Declaration submitted August 17, 2010 is of stabilized values, which are related to the recited stabilized values of the claims. As such, the data of the Declaration is probative and overcomes the inherency assertions made by the PTO.

The PTO proposes adding the fibrous alumina monohydrate of Bugosh to the composition of Elsik and cites Gernon “to show other properties claimed and well known facts in paints.” *Office Action*, pg. 5. As explained below, the principle of inherency is based on the inherent disclosure being necessarily present in a single reference. Applicants have clearly shown that the composition of Elsik does not inherently have the recited properties. A finding of inherency cannot be made based on a composition resulting from the combination of materials taught by separate references. Second, the properties of Gernon are tied to the composition of Gernon and cannot be attributed to the composition of Elsik as the compositions are different.

Furthermore, the PTO states that Applicants failed to show unexpected results. In fact, Applicants showed that the present activated boehmite imparts a combination of sag resistance and flow and leveling not previously achieved when using alumina thickeners, particularly when the composition is free of associative thickener.

As made clear from the Declarations provided by Dr. Yener, Elsik fails to teach or suggest, explicitly or inherently, a latex formulation that is both free of associative thickener and has the claimed sag resistance and flow and leveling properties. Accordingly, the PTO turns to Bugosh, relying on Bugosh for the use of high aspect ratio boehmite in aqueous solutions. Bugosh further discloses that fibrous boehmite can be used as reinforcing filler in making plastic films, coatings, paints, adhesives, or other plastic articles. The fibrous boehmite may be mixed with aqueous dispersions of polymers. (Bugosh, col. 29, ll. 1-21). Bugosh is silent regarding composition of the coatings and paints and is silent regarding characteristics of the coatings and paints, such as flow and leveling, sag resistance, and set-to-touch dry time characteristics. While, as disclosed by Bugosh, it may have been known to incorporate boehmite into coatings,

paints, and adhesives, Bugosh is silent regarding activating the boehmite particulate and is silent regarding the process for forming aqueous dispersions of polymers. Accordingly, Bugosh and a combination of Elsik and Bugosh do not disclose a latex formulation that necessarily, and thus, inherently has the recited thixotropic properties.

In addition, the PTO turns to Gernon '129, which discloses latex paint formulations that contain N-n-butyl ethanolamine (BAE) as a neutralizing agent. Gernon '129 discloses a flat interior paint that includes a Polyphobe 102 rheology modifier and other coatings that include RHOPLEX® or Acrysol® rheology modifiers. Polyphobe is a line of associative thickeners, as previously demonstrated. The flat interior paint of Example 2 (Table 3) of Gernon '129 reportedly exhibits a leveling of 8. Gernon '129 does not disclose the use of a boehmite rheology modifier and is silent regarding the sag resistance of the paint formulations. In particular, the PTO relies on Gernon '129 for the pH of commercial latex paint, the set dry time, the viscosity, and leveling of commercial latex paints. The viscosity and leveling can be influenced by the presence of associative thickener, which is present in the examples of Gernon '129. The PTO states that Gernon '129 is cited to show pH, set-to-touch dry time, and viscosity of commercial paints, not for thickeners, but clearly thickeners can influence some of such properties.

In the present specification and the experiments illustrated in the Declarations of Dr. Yener, Applicants clearly demonstrate that sag resistance, flow and leveling, and viscosity are influenced by the use of boehmite thickeners. As demonstrated by the examples provided in the Declaration of August 17, 2009, the properties of Gernon '129 are not inherent to the compositions of Elsik, particularly in absence of associative thickeners used in Gernon '129. Moreover, as illustrated by the experiments provided by Dr. Yener, not all latex formulations necessarily have the claimed flow and leveling and sag resistant properties. Even those formulations (e.g., Example 1 of Elsik) having a flow and leveling of at least 6 may have sag resistance lower than 1 mil, as there is a tradeoff between flow and leveling and sag resistance. Accordingly, the PTO cannot attribute the properties of Gernon '129 to the compositions of Elsik, particularly as modified with the addition of the boehmite particulate of Bugosh and in the absence of associative thickeners.

In the Office Action dated February 17, 2009 (pg. 8), the PTO states that the assertion of inherency is based solely on Elsik. Bugosh and Gernon '129 are referenced to show other properties that are claimed. The Declaration of Dr. Yener clearly demonstrates that the Examples 1 and 3 of Elsik do not exhibit the recited flow and leveling and sag resistance.

In contrast, claim 1 and claim 22 recite surface coating solutions that are free of associative thickener and have flow and leveling of at least 6 and a sag resistance of at least 7 mils. As demonstrated by the experiments illustrated in the Declarations by Dr. Yener, Examples 1 and 3 of Elsik do not necessarily provide latex formulation having the recited properties. Accordingly, any assertion that the proposed combination necessarily and thus, inherently has the claimed properties is erroneous.

For at least the foregoing reasons, claims 1, 4, 7, 10-22, 24, 26-34, and 55-64 are patentable over Elsik in view of Bugosh and in view of Gernon '129. As such, applicants respectfully request reconsideration and withdrawal of the 35 USC §103(a) rejection.

Applicants respectfully submit that the present application is now in condition for allowance. Accordingly, the Examiner is requested to issue a Notice of Allowance for all pending claims. Should the Examiner deem that any further action by the Applicants would be desirable for placing this application in even better condition for issue, the Examiner is requested to telephone Applicants' undersigned representative at the number listed below. The Commissioner is hereby authorized to charge any fees, which may be required, or credit any overpayment, to Deposit Account Number 50-3797.

Respectfully submitted,

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/John R. Schell/

Date

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